# SOME ECTOPARASITIC MITES FROM MAMMALS FROM SULAWESI UTARA, INDONESIA[1]

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ABSTRACT: Several species of ectoparasites were found on small mammal hosts from Sulawesi Utara, Indonesia, as follows: TROMBICULIDAE: *Schoengastia* n.sp., *Leptotrombidium deliense, Gahrliepia* (*Walchia*) *turmalis, Walchiella oudemansi, Siseca tara,* ATOPOMELIDAE: *Listrophoroides postsquamatus* and *L. kinabaluensis, LISTROPHORIDAE: Afrolistrophorus maculatus,* and MYOBIIDAE: *Radfordia selangorensis.* All are new records for Indonesia except for *Leptotrombidium deliense.*

Several authors have reported on larger ectoparasites (fleas, lice, ticks and larger mites) from mammals from Indonesia (Hadi et al., 1981 from West Sumatra; Hadi et al., 1983, from the Mt. Bromo area, East Java, Lewis and Jones, 1985, fleas from Sulawesi Selatan; Van Peenen et al., 1974, from the Gumbasa Valley, central Sulawesi). Fain (1981b) reported the atopomelid mite, *Listrophoroides* (*Marquesania*) *cucullatus,* from *Rattus hoffmanni* from Indonesia, and Fain and Lukoschus (1983) described five new rosensteiniids from Indonesia. Otherwise, with the exception of chiggers (Trombiculidae), there are almost no reports of smaller parasitic mites of mammals of Indonesia.

There are several reports of chiggers from Indonesia. Specifically from Sulawesi (formerly Celebes), Van Peenen et al. (1974) reported *Ascoschoengastia indica* (from *Rattus hoffmanni*), *Blankaartia acuscutellaris* (from *R. rattus, Suncus murinus*), *Eutrombicula wichmanni* (from *R. hoffmanni, R. rattus*), *Gahrliepia* (*Walchia*) *isonychia* (from *R. rattus*), *G.* (*Walchia*) sp. X (from *R. hoffmanni, R. rattus, Maxomys hellwaldi*), *G.* (*Walchia*) sp. Y (from *Maxomys hellwaldi*), *Leptotrombidium deliense* (from *R. hoffmanni, R. rattus, Maxomys hellwaldi*), and *Schoutedenichia* sp. (from *Rattus hoffmanni, Maxomys hellwaldi*).

Some of these and also *Gahrliepia disparunguis, Heaslipia gateri, Leptotrombidium arenicola, L. fletcheri, L. hazatoi, L. keukenshrijveri, L. pilosum, L. scutellare* and *Trombicula domrowi* have also been reported (Hadi et al., 1979, 1981, 1983; Hadi and Sarbini, 1985).

Thirty-eight mammals of eight species from Dumoga-Bone National Park, Sulawesi Utara, Indonesia were examined for smaller mites, including chiggers. The mammals were collected in February, 1985, mostly at about

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220-450 meters elevation. Due to the high level of endemism and the paucity of previous collections, it was hypothesized that this material would prove exceedingly interesting. Larger mites are being studied by Nixon A. Wilson. The purpose of this paper is to present the results of examinations for smaller ectoparasitic and phoretic mites.

## METHODS

The fur of the mammals was searched in the field by manipulation while viewing it under a dissecting microscope. Mites were put into vials of 70% alcohol, cleared and stained in Nesbitts solution, mounted in Hoyers solution, and ringed with Euparal. Voucher specimens are being deposited in The National Museum of Natural History, whereas other specimens are in the collections of the senior author, of A. Fain (Institut de Medecine Tropicale Prince Leopold, Antwerpen, Belgium), and of M. Lee Goff (Department of Entomology, University of Hawaii at Manoa, Honolulu).

## RESULTS

Most mites found on these animals were Trombiculidae (chiggers), Histiostomatidae, and Atopomelidae. In addition, a few myobiids and miscellaneous mites were found. Data are summarized below by species. It is of special interest that all of the host species, except *Rattus exulans,* are endemic to Sulawesi.

INSECTIVORA (Soricidae)
***Crocidura nigripes*** Miller & Hollister, 1921 (n = 1)
The only mites found on the one shrew determined as this species were 12 chiggers, *Schoengastia sulawesiensis* Goff, Durden and Whitaker (1986).
RODENTIA
***Maxomys hellwaldi*** (Jentink, 1878) (n = 6)
On the six individuals of this species were found the following:
Atopomelidae
*Listophoroides postsquamatus* Fain, 1976
4 on 2 host individuals
Trombiculidae (chiggers)
*Schoengastia sulawesiensis* Goff, Durden & Whitaker, 1986
8 on 3 host individuals
*Gahrliepia* (*Walchia*) *turmalis* Gater, 1932
2 on 2 host individuals
*Walchiella oudemansi* (Walch, 1922)
1 on 1 host individual
*Siseca tara* (Walch, 1923)
1 on 1 host individual
Histiostomatidae
*Histiostoma* sp.
3 on 1 host individual

***Maxomys musschenbroeki*** (Jentink, 1878) (n = 18)
Atopomelidae
*Listrophoroides kinabaluensis* Fain, 1976
72 on 16 host individuals
Listrophoridae
*Afrolistrophorus maculatus* Fain, 1976
1 on 1 individual
Myobiidae
*Radfordia* (*Rattimyobia*) *selangorensis* Fain, Lukoschus & Nadchatram, 1980
2 on 2 host individuals (1 adult female, one juvenile)
Trombiculidae (chiggers)
*Schoengastia sulawesiensis* Goff, Durden & Whitaker, 1986
6 on 3 host individuals
Histiostomatidae
*Histiostoma* sp.
909 on 16 host individuals
***Bunomys chrysocomus*** (Hoffman, 1887) (n = 6)
Trombiculidae
*Walchiella oudemansi* (Walch, 1922)
156 on 5 host individuals
Histiostomatidae
*Histiostoma* sp.
10 on 3 host individuals
***Bunomys fratrorum*** (Thomas, 1896) (n = 2)
Trombiculidae (chiggers)
*Walchiella oudemansi* (Walch, 1922)
5 on 1 host individual
*Schoengastia sulawesiensis* Goff, Durden & Whitaker, 1986
2 on 1 host individual
***Rattus exulans*** (Peale, 1848) (n = 1)
Trombiculidae (chiggers)
*Walchiella oudemansi* (Walch, 1922)
1 on 1 host individual
***Rattus hoffmanni*** (Matschie 1901)
Histiostomatidae
*Histiostoma* sp.
41 on 1 host individual
Atopomelidae
*Listrophoroides postsquamatus* Fain, 1967
1 on 1 host individual

## DISCUSSION

Five species of chiggers are included in this material. One is new, *Schoengastia sulawesiensis* Goff, Durden & Whitaker, 1986, whereas the rest had been described previously. Also included in this material are 2 species of *Listrophoroides* (Atopomelidae), one species of *Afrolistrophorus* (Listrophoridae), one species of histiostomatid, and one species of *Radfordia* (Myobiidae).

As is often the case, chiggers showed little host specificity, *Walchiella*

*oudemansi* and *Schoengastia sulawesiensis* each occurred on four of the nine hosts; *Gahrliepia* (*Walchia*) *turmalis* and *Siseca tara* occurred on two, whereas *Leptotrombidium deliense* occurred on only one.

*Listrophoroides* (*Listrophoroides*) *kinabaluensis* Fain, 1976 was described from *Maxomys whiteheadi* from Mont Kinabalu, Borneo and has also been taken from the same host from Sarawak, from Baru Jumpa, "au sud de Tenom, au nord de Borneo," from Mont Brinchang, Pahana, Malaysia, and also from *Rattus xanthurus* from north of the Celebes (Fain 1981b).

*Listrophorides postsquamatus* Fain, 1976 was described from *Rattus everetti* from the Philippines (Fain, 1981b).

*Radfordia selangorensis* was described from *Rattus whiteheadi* from Selangor, Malaysia by Fain, Lukoschus and Nadchatram (1980).

*Afrolistrophorus maculatus* was originally described by Fain (1976) from *Rattus sabanus* from Malaysia.

The histiostomatids were attached to the body of laelapid mites, *Echinolaelaps* sp.

Species apparently not previously taken in Indonesia are all chiggers except *L. deliense,* the atopomelids, *Listrophoroides kinabaluensis,* and *L. postsquamatus,* the listrophorid, *Afrolistrophorus maculatus,* and the myobiid, *Radfordia selangorensis.*

Specimens of many of the species are being deposited in the Institut Royal des Sciences, Brussels, Belgium; The University of Hawaii at Manoa (chiggers), and The National Museum of Natural History, Washington, D.C.

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## LITERATURE CITED

**Fain, A.** 1976. Nouveaux acariens parasites de la superfamille listrophoroidea (Astigmates). Acta Zool. Antverp. 64: 37-67.

**Fain, A.** 1981a. Notes sur les Listrophoridae (Acari: Astigmata) II. Description d'especes insuffisamment connues et de deux especes nouvelles. Acarologia 22: 415-426.

**Fain, A.** 1981b. Le genre *Listrophoroides* Hirst, 1923 (Acari, Astigmata, Atopomelidae) dans la region Orientale. Bull. Inst. r. Sci. nat. Belg. 53: 1-123.

**Fain, A., and F.S. Lukoschus.** 1983. Five new species of Rosensteiniidae (Acarina, Astigmata) from Indonesia, associated with bats or with the earwig *Xeniaria jacobsoni.*

Zoolog. Mededelingen 57: 31-42.
Fain, A., F.S. Lukoschus and M. Nadchatram. 1980. Malaysian parasitic mites II. Myobiidae (Prostigmata) from rodents. Internat. J. Acarol. 6: 109-120.
Goff, M.L., L.A. Durden and J.O. Whitaker, Jr. 1986. A new species of *Schoengastia* (Acari: Trombiculidae) from mammals collected in Sulawesi, Indonesia. Internat. J. Acarol. 12: 91-93.
Hadi, T.R., and S. Sarbini. 1985. Trombiculid mites of Sunter, North Jakarta, Indonesia. Southeast Asian J. Trop. Med. Pub. Health 16: 126-127.
Hadi, T.R., S. Sarbini, and R.J. Brown. 1983. Small mammalian ectoparasites from Mt. Bromo area, East Java, Indonesia. Southeast Asian J. Trop. Med. Pub. Health 14: 422-425.
Hadi, T.R., S. Sarbini, and D.T. Dennis. 1981. Survey of small mammal ectoparasites in West Sumatra, Indonesia. Southeast Asian J. Trop. Med. Pub. Health 12: 275-277.
Hadi, T.R., E.E. Stafford and R. Irsiana. 1979 The occurrence of *Leptotrombidium* (*Leptotrombidium*) *arenicola* in Indonesia. Biotrop. Spec. Publ. No. 6: 61-66.
Lewis, R.E., and G.S. Jones. 1985. Some fleas (Siphonaptera) from Sulawesi Selatan, with the description of three new species. J. Med. Entomol. 22: 204-211.
Van Peenen, P.F.D., W.P. Carney, M. Sudomo, and J. Saroso. 1974. Parasites of mammals of Gumbasa Valley, Central Sulawesi, Indonesia. Trop. and Geogr. Medic. 26: 352-358.

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